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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An optical waveguide connecting structure in which core layers are connected to make an optical coupling therebetween by using a plurality of optical waveguide films each having said core layers covered with a clad layer on the periphery thereof, said core layers functioning as an optical waveguide, comprising:

a first optical waveguide provided with a first core layer, one longitudinal section of which is exposed as a first section along an optical path direction thereof~~in which a first section slightly slants relative to an optical path direction of said first core layer is set to form a small angle of approximately 5 degrees or less with said optical path direction and said first core layer is exposed in said first section~~; and

a second optical waveguide provided with a second core layer, one end section portion of which is exposed as a second section, ~~in which said second core layer is exposed at one end portion thereof in a section forming an angle of approximately 5 degrees or less with said optical path direction,~~

wherein said first section and said second section are opposed and connected to each other such that said optical path direction of said first core layer and an optical path direction of said second core layer intersect at an angle of approximately 5 degrees or less, and wherein ~~while~~

~~setting both of~~ said first core layer and the second core layer both are set at approximately a same height from a common reference surface.

2. (original): The optical waveguide connecting structure according to claim 1, wherein at least one of said first optical waveguide and said second optical waveguide is formed of an optical waveguide film.

3. (original): The optical waveguide connecting structure according to claim 1, wherein each of said first section of said first optical waveguide and said second section of said second optical waveguide is formed of a section vertical to a surface of said first optical waveguide.

4. (original): The optical waveguide connecting structure according to claim 1, wherein each of said first section of said first optical waveguide and said second section of said second optical waveguide is formed of a slant surface relative to a vertical direction to a surface of said first optical waveguide.

5. (original): The optical waveguide connecting structure according to claim 1, wherein said second optical waveguide includes a mirror surface, which is formed of a third section cut obliquely relative to a thickness direction, at an other end portion at an opposite side of said one end portion of said second core layer.

6. (original): The optical waveguide connecting structure according to claim 1, wherein said first optical waveguide and said second optical waveguide are formed on a base substrate.

7. (original): The optical waveguide connecting structure according to claim 1, wherein said first optical waveguide is formed on a base substrate, said second optical waveguide is formed on a reference plate, and said core layer of said second optical waveguide is aligned with said core layer of said first optical waveguide at a same height from said reference plate as said reference surface by abutting said first optical waveguide to said reference plate.

8. (original): The optical waveguide connecting structure according to claim 1, wherein said first optical waveguide is cut to expose a side surface of said first core layer in a section along said optical path direction from said one end portion to said other end portion.

9. (currently amended): The optical waveguide connecting structure according to claim ~~1~~5, further comprising:

a third optical waveguide having a third core layer formed thereon and a mirror surface formed on said third core layer by cutting said third core layer obliquely relative to a thickness direction at an other end portion, said third core layer being partially exposed at a position opposed to an exposed surface of said first core layer in a side surface of said one end portion, being extended having a specified angle relative to said exposed surface of said first core layer from said exposed portion to a halfway portion, and being extended in parallel to said exposed surface of said first core layer from said halfway portion to said other end portion,

wherein said first core layer and said third core layer are connected at approximately a same height position while maintaining a relation that said mirror surface of said third core layer and ~~a~~ said mirror surface of said second core layer are arranged to be opposed to each other.

10. (original): The optical waveguide connecting structure according to claim 1, wherein at least one of said second core layer and said third core layer is adhered to said first core layer by an adhesive having approximately a same refractive index as those of said first core layer to said third core layer.

11. (original): The optical waveguide connecting structure according to claim 1, wherein two said first optical waveguides are used to be arranged on a base substrate such that said optical path directions thereof form a specified angle, said second optical waveguide is provided, which has said second sections at said both end portions of said core layer thereof, said second sections being opposed to said first sections of two said first optical waveguides, and said core layer of said second optical waveguide forms a curved-shape to change said optical path direction by a specific angle.

12. (original): The optical waveguide connecting structure according to claim 11, wherein, instead of said second optical waveguide, an optical waveguide is used, in which a mirror surface for totally reflecting optical signals is formed at a halfway position of said core layer functioning as said optical waveguide by which said optical signals are made incident and emitted.

13. (original): An optical element mounting structure assembled by using an optical waveguide connecting structure, comprising:

an optical waveguide connecting structure in which core layers are connected to make an optical coupling therebetween by using a plurality of optical waveguide films each having said

core layers covered with a clad layer on the periphery thereof, said core layers functioning as an optical waveguide, including: a first optical waveguide provided with a first core layer, in which a first section slightly slants relative to an optical path direction of said first core layer is set to form a small angle of approximately 5 degrees or less with said optical path direction and said first core layer is exposed in said first section; and a second optical waveguide provided with a second core layer, in which said second core layer is exposed at one end portion thereof in a section forming an angle of approximately 5 degrees or less with said optical path direction, wherein said first section and said second section are opposed and connected to each other while setting both of s said first core layer and the second core layer at approximately a same height from a common reference surface; and wherein said second optical waveguide includes a mirror surface, which is formed of a third section cut obliquely relative to a thickness direction, at an other end portion at an opposite side of said one end portion of said second core layer; and

an optical element substrate having an optical element connected thereto,

wherein said optical element substrate is disposed such that said optical element is opposed to said mirror surface of said second core layer of said third section of said second optical waveguide.

14. (original): An optical element mounting structure, comprising:

a base substrate having a first optical waveguide disposed thereon; and

an optical element substrate, on which at least a second optical waveguide is disposed via a spacer and an optical element is mounted,

wherein core layers of said first optical waveguide and said second optical waveguide are exposed in sections each forming a slight angle of approximately 5 degrees or less with optical paths of said core layers, and

said base substrate and said optical element substrate are combined by abutting said first optical waveguide to a surface of said spacer of said optical element substrate as a reference surface such that said sections of said core layers are opposed to each other at a same height from said base substrate.

15. (original): An optical element mounting structure, comprising:

a base substrate having a first optical waveguide disposed thereon; and

an optical element substrate, on which at least a second optical waveguide is disposed via a spacer and an optical element is mounted,

wherein core layers of said first optical waveguide and said second optical waveguide are exposed in sections each forming a slight angle of approximately 5 degrees or less with optical paths of said core layers, and

said base substrate and said optical element substrate are combined by abutting said second optical waveguide to a surface of said base substrate as a reference surface such that said sections of said core layers are opposed to each other at a same height from said base substrate.

16. (original): An optical element mounting structure, comprising:

a first optical waveguide film, in which a section of a core layer is exposed at one end portion thereof and an other end portion of said core layer exposed in a first section forming a slight angle of about 5 degrees or less with optical paths of said core layers at said other end portion of said first optical waveguide film;

an optical element of which any one of a light-emitting window and a light-receiving window of said optical element is connected to said section of said core layer of said first optical waveguide to form a combined body with said first optical waveguide film; and

a second optical waveguide film, in which a core layer at least at one end portion thereof is exposed in a second section forming a slight angle of 5 degrees or less with said optical path,

wherein both said first optical waveguide film and said second optical waveguide film are placed on a base substrate and said core layer exposed in said first section and said core layer exposed in said second section are aligned at a same height by using said base substrate as a reference surface and are adhered to each other.

17. (original): An optical element mounting structure, comprising:

a first optical waveguide film, in which a section slants relative to a film surface is formed at one end portion, a core layer of a first optical waveguide is exposed in said section, said other end portion of said core layer is exposed in a first section forming a slight angle of approximately 5 degrees or less with optical paths of said core layers;

an optical element connected to a surface of said first optical waveguide film at a position to which optical signals of said first optical waveguide totally reflected at said section are reached,

a second optical waveguide film, in which at least one end portion of a core layer is exposed in a second section forming a slight angle of approximately 5 degrees or less with said optical path,

wherein both said first optical waveguide film and said second optical waveguide film are placed on a base substrate and said core layer exposed in said first section and said core layer exposed in said second section are aligned at a same height from said base substrate and are adhered to each other.

18. (original): An optical element mounting structure, comprising:

a printed circuit board, in which a first optical waveguide having a core layer connected to an optical element at one end portion thereof is disposed on a base substrate, and an other end portion of said core layer of said first optical waveguide is exposed in a first section forming an angle of approximately 5 degrees or less with an optical path direction of said core layer; and

a second optical waveguide film on said base substrate, having a core layer exposed in a second section forming a slight angle of approximately 5 degrees or less with said optical path in one end portion thereof,

wherein one end of said second optical waveguide film is placed on said base substrate of said printed circuit board while setting said height of said core layer from said base substrate approximately equal to that of said core layer of said first optical waveguide, and

said core layer exposed in said second section of said second optical waveguide film and said core layer exposed in said first section of said printed circuit board are in contact with each other.

19. (original): The optical element mounting structure according to claim 18, wherein a reference plate covering a joint portion of said second optical waveguide film and said first optical waveguide is adhered onto said second optical waveguide film, and said height of said core layer of said second optical waveguide film is set equal to that of said core layer of said first optical waveguide by abutting said first optical waveguide to a surface of said reference plate.

20. (original): The optical element mounting structure according to claim 18, wherein said second optical waveguide film has a portion in which a width of said optical waveguide inside said second optical waveguide film is widened in a shape of a taper and a portion in which a space portion so as to cross said optical path of said core layer at said portion widened in said shape of taper is formed, said portion being for connecting the widened core layers with interposing said space portion therebetween, and

said space portion is formed to have a curved shape in which a width of the space in the direction of said optical path is widened as getting away from an optical axis of said core layer in a vertical direction.

21. (original): An optical fiber mounting structure, comprising: first optical waveguide film, in which, a fourth section slightly slants at approximately 5 degrees or less relative to a film surface thereof is formed at one end portion, one end portion of a core layer is exposed in said fourth section, a first section is formed at an other portion of said core layer, said first section being approximately vertical to said film surface of said first optical waveguide film and forming an angle of approximately 5 degrees or less with an optical path direction of said core layer;

an optical fiber having a section cut at an angle of approximately 5 degrees or less respective to a core layer direction, said optical fiber being connected to said fourth section of said first optical waveguide film by aligning said core layers thereof; and

a second optical waveguide film in which at least one end portion of said core layer is exposed in a second section vertical to said film surface and slightly slants at approximately 5 degrees or less relative to said optical path,

wherein both of said first optical waveguide film and said second optical waveguide film are placed on a base substrate and a height from said base substrate of said core layer exposed in said first section and that of said core layer exposed in said second section are set equal and adhered to each other.